

REMARKS

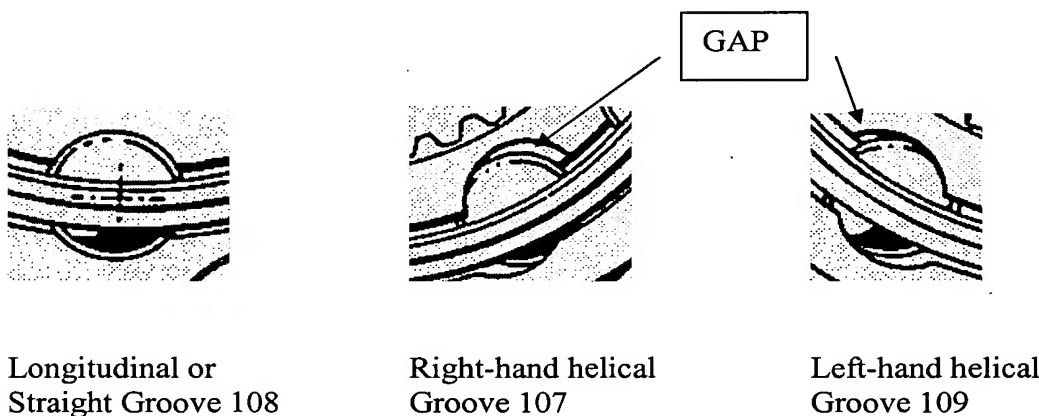
After entry of this Amendment, claims 1 – 2, 4 – 5, and 8 – 21 are pending in the application. Claims 1, 10 and 11 have been amended. Claims 3, 6 and 7 have been cancelled. Claim 21 has been added. Reconsideration of this application as amended is respectfully requested.

In the Office Action dated August 1, 2005, Claims 1, 2, 4-8 and 10 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Aucktor et al. Claims 1 – 20 also stand rejected under 35 U.S.C. § 102(b) as being anticipated by DE 38 18 730. It is submitted that neither Aucktor et al. nor DE 38 18 730, taken singularly or in any permissible combination, teach or suggest the invention as now recited in claim 1.

Claim 1 has been amended to recite that the plurality of radially outwardly facing grooves include at least three groove pairs extending in different rotational directions with respect to one another along the outer surface, wherein the at least three groove pairs includes at least one pair of the plurality of radially outwardly facing longitudinal grooves being two straight grooves mirrored from one another about the centered longitudinal axis of the inner joint member and a first pair of the plurality of radially outwardly facing substantially helical grooves being two right-hand helical grooves in mirrored rotational relation to each other about the centered longitudinal axis of the inner joint member and a second pair of the plurality of radially outwardly facing substantially helical grooves being two left-hand helical grooves in mirrored rotational relation to each other about the centered longitudinal axis of the inner joint member. It is submitted that neither Aucktor et al. nor DE 38 18 730 teaches or suggests three groove pairs extending in different rotational directions with respect to one another along the outer surface mirrored from one another about the centered longitudinal axis of the inner joint member.

For the convenience of the Examiner and as known in the art, a longitudinal, or straight, groove appears in the plane view of joint drawings as semi-circle. Helical grooves appear as a semi-circle with an additional arcuate line. The arcuate line is actually the edge of the ball; but the gap between the ball and the edge of the groove demonstrates the groove is helical. A right-hand groove is distinguished from a left hand groove in the drawings by comparing whether the additional arcuate line is disposed on the clockwise side of the semi-circle or the counter-clockwise side of the semi-circle. In other words, the gap between the ball and the edge of the groove will be on a first angular

side of the groove center line with respect to longitudinal center axis of the inner joint when the helical groove is of right-hand rotation and will be to a second angular side of the groove center line opposite the first side when the helical groove is of right-hand rotation. The figures below are taken from Attachment 1 to this Amendment, Figure 1 of U.S. Pat. No. 4,678,453. The groove 107 is right-hand because the gap is to the counter-clockwise angular side of the semi-circle and the groove 109 is left-hand because the gap is to the clockwise angular side of the semi-circle. It is important to keep in mind that the designation of right-hand or left-hand is relative to perspective.



In the Amendment filed May 31, 2005, requesting continued examination, claim 1 was amended to recite that longitudinal axis referred to in the claim is centered with respect to the inner joint member. The Examiner had previously asserted that the axis 9 shown in Figure 4 of Aucktor et al. was a longitudinal axis as recited in the claims. Claim 1 further recites that grooves are mirrored about the centered longitudinal axis. Claim 1 does not recite that the grooves are mirrored about a plane intersecting the centered longitudinal axis. Claim 1 also recites that the grooves are on opposite sides of the centered longitudinal axis.

For the convenience of the Examiner, the table set forth below lists the groove pairs disclosed by the prior art.

<u>Reference</u>	<u>Longitudinal or Straight Grooves</u>	<u>Right-hand (r/h) grooves</u>	<u>Left-hand (l/h) grooves</u>	<u>Groove Pairs disposed about centered longitudinal axis of inner joint</u>
Figure 1 of U.S. Pat. No. 4,678,453	102, 104, 106, 108, 110, 112	103, 107, 111	101, 105, 109	101 – 107 (l/h – r/h); 102 – 108 (long. – long.); 103 – 109 (r/h – l/h); 104 – 110 (long. – long.); 105 – 111 (l/h – r/h); 106 – 112 (long. – long.)
Figure 3 of U.S. Pat. No. 4,678,453	103, 106, 109	101, 104, 107	102, 105, 108	101 – 105 (r/h – l/h); 102 – 107 (l/h – r/h); 104 – 108 (r/h – l/h)
Figure 2 of DE 38 18 730	102, 104, 106, 108	None	101, 103, 105, 107	101 – 105 (l/h – l/h); 102 – 106 (long. – long.); 103 – 107 (l/h – l/h); 104 – 108 (long. – long.)
Figure 4 of DE 38 18 730	102, 104, 106, 108	103, 105	101, 107	101 – 105 (l/h – r/h); 102 – 106 (long. – long.); 103 – 107 (r/h – l/h); 104 – 108 (long. – long.)

As demonstrated by the table, none of the references teach or suggest three groove pairs extending in different rotational directions with respect to one another along the outer surface, wherein the at least three groove pairs includes at least one pair of the plurality of radially outwardly facing longitudinal grooves being two straight grooves mirrored from one another about the centered longitudinal axis of the inner joint member and a first pair of the plurality of radially outwardly facing substantially helical grooves being two right-hand helical grooves in mirrored rotational relation to each other about the centered longitudinal axis of the inner joint member and a second pair of the plurality of radially outwardly facing substantially helical grooves being two left-hand helical grooves in mirrored rotational relation to each other about the centered longitudinal axis of the inner joint member. In other words, the prior art does not teach or suggest an inner joint having all three of a (long. – long.) groove pair and a (r/h – r/h) groove pair and a (l/h – l/h) groove pair. It is therefore submitted that claim 1 defines over the art and is in suitable condition for allowance. Claims 2, 4, 5, 8, and 9 depend from claim 1 and are therefore also in suitable condition for allowance.

If the rejection of claim 1 is maintained, Applicants' attorney requests that the Examiner provide a marked-up figure clearly identifying the grooves, axis, and nature of mirrored relation allegedly shown in the prior art. The subject matter of the present

application involves complex three dimensional geometry and written remarks do not facilitate forwarding prosecution. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part relied on must be designated as nearly as practicable. M.P.E.P. § 706, 37 C.F.R. 1.104.

Claim 10 has been amended to recite an inner joint member and an outer joint member and to further define the plurality of balls as transmitting torque between the inner and outer joint members. The application as originally filed set forth that the balls transmit torque in paragraph [0002]. Neither Aucktor et al. nor DE 38 18 730 teaches or suggests torque transmitting balls disposed in helical grooves in mirrored rotational relation to one another. As set forth above, Aucktor et al. teaches disposing the balls transmitting torque in grooves of opposite rotational relation. For example, the balls are in (l/h – r/h) groove pairs or (r/h – l/h) groove pairs. A translation of DE 38 18 730 is submitted with this Amendment. The balls 11 of DE 38 18 730 that are disposed in helical grooves 14 do not transmit torque. Translation of DE 38 18 730, page 1, lines 23 – 27; page 2, lines 1 – 5; page 3, lines 6 – 9, 21 – 26, 32 – 33; page 4, line 21 through the end of the document. It is therefore submitted that claim 10 defines over the prior art and is suitable condition for allowance. Claim 11 and new claim 21 depend from claim 10 and are therefore also allowable by dependency.

Claim 12 stands rejected under 35 U.S.C. § 102(b) in view of DE 38 18 730 and under 35 U.S.C. § 103(a) as being unpatentable over Aucktor et al. in view of Schwarzler, U.S. Pat. No. 5,685,777. Claim 12 recites a cage surrounding said inner joint member and defining a plurality of windows wherein each of said plurality of balls individually pierces one of said plurality of windows, said plurality of windows including short windows adjacent said substantially longitudinal grooves and long windows adjacent said substantially helical grooves. Aucktor et al. shows two views, Figures 2 and 6, of a single window of the cage 7; neither view shows different sized windows. DE 38 18 730 shows one view, Figure 1, of one window of the cage 4. Schwarzler shows three views, Figures 3 – 5, of two windows having the same size. Since none of the reference recites a cage with different sized windows, much less the position of the windows relative to the particular grooves, it is submitted that claim 12 defines over the prior art and is suitable condition for allowance. Claims 13 – 15 depend from claim 12 and are therefore also allowable by dependency. If the rejection is maintained, Applicants' attorney requests that the Examiner specifically identify the basis for the rejection by column and line number of

the cited patents. A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.

M.P.E.P. § 2131.01. To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. M.P.E.P. § 2143.03.

Applicants' further requests detailed explanation of the rejection of claims 18 – 19. Specifically, Applicants' further requests that the Examiner provide a marked-up figure to show where DE 38 18 730 discloses (1) two right-hand helical grooves spaced substantially one hundred and eighty degrees apart from one another about said centered longitudinal axis (claim 17) in combination with two left-hand helical grooves spaced substantially one hundred and eighty degrees apart from one another about said centered longitudinal axis (claim 18), as well as (2) *each* of said two left-hand helical grooves is spaced substantially ninety degrees apart from *each* of said two right-hand grooves about said centered longitudinal axis (claim 19). It is important that the written record clearly explain the rationale for decisions made during prosecution of the application. M.P.E.P. § 706.02(j).

New claim 21 has been added. Claim 21 does not add new matter to the application or necessitate further search or consideration by the Examiner. The feature recited in claim 21 was previously recited in claim 10. It is submitted claim 21 is allowable by dependency from claim 10 and, further, individually defines over the art for the reasons set forth with respect to claim 12.

It is submitted that the amendments have antecedent basis in the application as filed and that the amendments do not add new matter to the application. It is further submitted that the amendments place the claims of the application in suitable condition for allowance; notice of which is respectfully requested.

**Respectfully submitted,
HOWARD & HOWARD ATTORNEYS**



Raymond C. Meiers, Registration No. 51,081
Howard and Howard Attorneys, P.C.
The Pinehurst Office Center, Suite 101
39400 Woodward Ave.
Bloomfield Hills, MI 48304-5151
Phone (248) 723-0417

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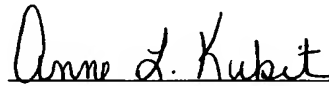
Date

Attachments:

- Figures 1 and 3 of U.S. Patent 4,678,453 and Figures 2 and 4 of DE 3818730 (4 Pgs.)
- SB08A Form (1 Pg) & an English Translation of German Reference DE3818730C1
- Interview Summary

CERTIFICATE OF MAILING PURSUANT TO 37 C.F.R. §§ 1.1 AND 1.8

I hereby certify that this AMENDMENT, Figures 1-4 of U.S. Patent 4,678,453 (4 Pgs.) and a SB08A Form with an attached English Translation of German Reference DE 38 18 730 C1 as well as Interview Summary, are all being deposited with the United States Postal Service in an envelope addressed to MAIL STOP AMENDMENT, Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450, on October 19, 2005.



Anne L. Kubit